



Congenital Cardiology Solutions

PLEURAL FLUID ACCUMULATION IN CHILDREN WITH UNIVENTRICULAR CONGENITAL HEART DISEASE: THE APPLICATION OF LIGHT'S CRITERIA AFTER THE GLENN AND FONTAN PALLIATION

Poster Contributions

Poster Sessions, Expo North

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Background: Postoperative pleural effusions contribute to significant morbidity in patients undergoing single-ventricle palliation. Effusions are often attributed to increased central venous pressure, suggestive of transudates. We analyzed postoperative pleural fluid after cavopulmonary anastomosis operations.

Methods: We prospectively enrolled patients prior to Glenn (n=18) or fenestrated Fontan (n=21). Pleural fluid was collected on predetermined postoperative days for the duration of chest tube placement and analyzed for cell counts, total protein, lactate dehydrogenase, triglycerides, and vascular endothelial growth factor (VEGF). Perioperative hemodynamics, surgical variables, chest tube volume, and output duration were collected and compared among patients with and without persistent chest tube drainage beyond 7 days.

Results: The application of Light's criteria revealed all pleural fluid samples to be exudates. There was no difference in pleural fluid composition, preoperative oxygen saturation, mean pulmonary artery pressures, or pulmonary vascular resistance in Fontan patients with prolonged effusions compared to Fontan patients with effusions ≤ 7 days in duration.

Conclusions: Persistent pleural effusions after cavopulmonary anastomosis are exudative in nature. To our knowledge this is the first study to analyze the composition of pleural fluid after these operations and suggests a mechanism other than increased central venous pressure.

Baseline hemodynamics and pleural fluid composition (median and IQR) post Glenn and Fontan operation

Group	Mean pulmonary artery pressure (range)	Pulmonary vascular resistance (units $\times m^2$)	Bypass time (minutes)	LDH (U/L)	Triglycerides (mg/dL)	Total protein (g/dL)	VEGF (pg/mL)
Glenn (n=18)	13 mmHg (7-18)	1.73 (1.41-2.45)	82 (62-128)	1003 (746-2187)	43 (22-61)	2.87 (2.20-3.48)	3171 (2493-3510)
Fontan ($<7d$, n=11)	10 mmHg (7-15)	1.87 (1.40-2.71)	101 (93-124)	727 (534-1083)	41 (17-55)	2.58 (2.28-3.00)	427 (253-963)
Fontan ($>7d$, n=10)	11mmHg (7-14)	1.60 (1.21-2.24)	119 (82-174)	673 (329-1343)	77 (48-133)	2.80 (2.08-3.40)	429 (230-725)